

Realization of a low carbon society through game changing technologies

Biosynthesis of sequence-regulated bacterial polyesters with elastic properties



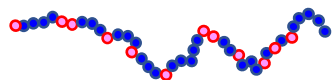
Project Leader : Ken'ichiro Matsumoto
Professor, Faculty of Engineering, Hokkaido University

Summary :

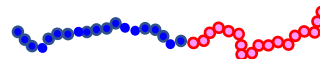
Bacterial polyester polyhydroxyalkanoates are attracting considerable research interest because they are carbon neutral and superior biodegradable material including marine environments. A drawback of the material is its physical properties that limited the range of applications. We recently developed a novel method to synthesize sequence-regulated polymers, while only random copolymers have been produced previously. Based on the technology, this project aims at developing new sequence-regulated polymers with desired physical properties.



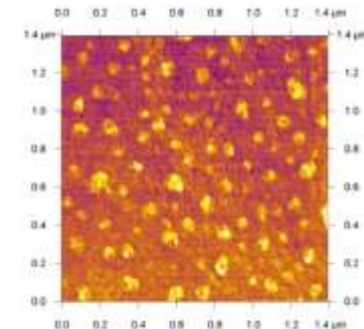
Sequence-regulated polyester film synthesized in the engineered *Escherichia coli*



Random copolymer
(previously reported)



Sequence-regulated polymer
(Block copolymer)



Nanostructure of micropore separation observed in block copolymer